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Twice-Exceptionality in Early Childhood Education: A Critical Synthesis of Conceptual and Empirical Literature

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1. Dyslexia Association of Singapore

Abstract

Twice-exceptionality (2e) refers to individuals who demonstrate high potential or giftedness alongside one or more disabilities, including specific learning disorders, attention-deficit/hyperactivity disorder, or autism spectrum disorder. While the coexistence of giftedness and disability is increasingly recognised, research on twice-exceptionality in early childhood education remains limited, particularly within Asian contexts. This paper presents a critical synthesis of conceptual and empirical literature on twice-exceptionality, with a specific focus on early childhood education. Drawing on theoretical developments in giftedness and learning disabilities, as well as empirical studies across key domains including identification, programming, teacher readiness, and parent partnerships, the review interrogates structural and epistemological tensions that contribute to the under-identification and under-support of twice-exceptional learners. The analysis demonstrates that definitional ambiguity, reliance on standardised assessment practices, and limited teacher preparedness reinforce deficit-oriented educational responses. The paper advances a systems-level perspective, arguing that meaningful progress requires alignment across conceptual frameworks, assessment practices, and pedagogical approaches. It concludes by calling for contextually grounded research and integrated models of practice to better support twice-exceptional learners in early childhood settings.

Keywords: Twice-exceptionality; giftedness; learning disabilities; early childhood education; identification; teacher cognition, parent partnerships and educational systems.

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INTRODUCTION

Twice-exceptionality (2e) presents a significant conceptual and practical challenge within contemporary education. Learners who are twice-exceptional exhibit high potential alongside disabilities that may impede performance, resulting in profiles that disrupt traditional educational classifications. Historically, giftedness and disability have been conceptualised as distinct and mutually exclusive categories, a dichotomy that continues to shape policy, assessment, and practice (Brody & Mills, 1997; Reis et al., 2014).

Although research has increasingly acknowledged the coexistence of giftedness and disability, identification and support remain inconsistent. These inconsistencies are particularly pronounced in early childhood education, where developmental variability complicates interpretation and where formal assessment systems are less established (Chamberlin et al., 2007; Firat & Bildiren, 2022). Early childhood represents a critical developmental period during which both strengths and challenges begin to emerge, yet existing frameworks often lack the sensitivity to detect their co-occurrence.

In Singapore and internationally, inclusive education has gained increasing policy attention, particularly within early childhood care and education (Lipponen et al., 2019). However, explicit recognition of twice-exceptionality remains limited. This gap raises important questions regarding the extent to which current systems are equipped to support learners whose profiles do not conform to conventional categories.

This paper critically synthesises conceptual and empirical literature on twice-exceptionality, with a focus on early childhood education. It examines how definitions, identification practices, pedagogical approaches, and educator beliefs interact to shape the visibility and educational experiences of twice-exceptional learners. In doing so, it advances a systems-level perspective that highlights the interdependence of these factors.

CONCEPTUAL FOUNDATIONS

Evolving Conceptions of Giftedness

The conceptualisation of giftedness has evolved from a narrow psychometric orientation towards more multidimensional and developmental perspectives. Early models, such as those proposed by Terman (1925), conceptualised giftedness primarily in terms of high intelligence, typically operationalised through intelligence quotient (IQ) scores, thereby privileging cognitive performance as the primary indicator of ability. Subsequent theoretical developments expanded this view to include creativity, motivation, and domain-specific abilities (Renzulli, 1979, 1999; Gardner, 2006).

Renzulli and Reis (2018) further distinguished between academic and creative-productive forms of giftedness, emphasising that traditional measures capture only a subset of human potential. Despite these advances, educational systems continue to rely heavily on academic indicators, which is likely to exclude learners whose strengths are non-traditional or masked by disabilities.

Learning Disabilities and Developmental Variability

Learning disabilities are characterised by heterogeneity in both manifestation and severity. Contemporary frameworks conceptualise them as neurodevelopmental conditions that affect the acquisition of academic skills (American Psychiatric Association, 2022). However, variability in expression, particularly in early childhood, complicates identification.

Interpretations of learning disabilities are also shaped by contextual factors, including cultural expectations and educational practices (McBride, 2019; Hoeft et al., 2015; Department for Education, 2021). These factors influence how behaviours are interpreted and whether they are recognised as indicative of difficulty.

Twice-Exceptionality as a Construct

Twice-exceptionality highlights the coexistence of strengths and difficulties within the same individual. A defining feature of this construct is masking, where strengths may conceal disabilities, or disabilities may obscure strengths (Baldwin et al., 2015; Brody & Mills, 1997). This phenomenon challenges categorical approaches to identification and underscores the need for more nuanced frameworks.

Conceptual Framework

This review adopts a social constructivist perspective informed by Piaget (1952), Vygotsky (1978), and Dewey (1916/2009). Learning is conceptualised as a dynamic process shaped by interactions between individuals and their environments. Within this framework, twice-exceptionality is understood as emerging from the interaction between learner characteristics and educational contexts. Identification and support are therefore contingent on both individual profiles and system responsiveness.

A CRITICAL SYNTHESIS OF TWICE-EXCEPTIONALITY RESEARCH

1. Twice-Exceptionality in Early Childhood Care and Education

Twice-exceptionality (2e) is increasingly recognised as a legitimate educational construct, yet its presence in early childhood remains underexplored. Although early discussions of coexisting strengths and difficulties can be traced to early dyslexia research (Weill, 1987),

contemporary scholarship has established that giftedness can co-occur with a wide range of disabilities, including attention-deficit/hyperactivity disorder, autism spectrum disorder, and specific learning disorders (Assouline et al., 2009; Blackburn & Townend, 2019; Reis et al., 2014; Ronksley-Pavia, 2015). Despite this, educational systems continue to privilege traditional definitions of giftedness, often rooted in intellectual performance, which contributes to the under-identification of 2e learners (Crepeau-Hobson & Bianco, 2010).

This issue is particularly pronounced in early childhood education. Empirical studies on 2e preschoolers remain limited (Chamberlin et al., 2007; Firat & Bildiren, 2022; Sherwood, 1996), reflecting both methodological challenges and conceptual ambiguity. Developmental variability during early childhood complicates distinctions between advanced ability, asynchronous development, and emerging disabilities. Consequently, behaviours indicative of 2e may be interpreted in isolation rather than as part of an integrated developmental profile.

Kuo et al. (2010) provide one of the few empirical investigations into 2e preschoolers through their evaluation of the “Enrichment Program for Cultivating Problem Solving Abilities and Multiple Intelligences for Gifted Preschoolers” (PSMIGP programme) in Taiwan. Their findings demonstrate that with modified assessment approaches and multiple identification methods, 2e preschoolers can be identified and benefit from structured programming. Notably, their study reinforces the developmental urgency of early identification, as delays may constrain the growth of cognitive abilities during a critical period of neurodevelopment (Kuo et al., 2010; Chamberlin et al., 2007). While inclusive education has gained traction, support structures remain largely oriented towards disability, potentially overlooking the dual profiles of 2e learners. This reflects a broader systemic pattern in which policy frameworks shape both visibility and intervention priorities.

2. Identification: Conceptual Ambiguity and Methodological Constraints

2.1 Lack of Formalised Definitions

A persistent issue in the identification of 2e learners is the absence of universally accepted definitions. As Brody and Mills (1997) argue, operational definitions are intrinsically linked to identification practices. Without conceptual clarity, identification becomes inconsistent and fragmented.

Efforts to address this gap include the work of the National Twice-Exceptional Community of Practice (2e CoP), which sought to establish a shared understanding of 2e learners (Baldwin et al., 2015a). Their definition highlights the dynamic interaction between strengths and disabilities, particularly the phenomenon of masking, where one

exceptionality obscures the other. This conceptualisation shifts the focus from static categorisation to dynamic interaction, yet its translation into practice remains uneven. Where no formalised definition exists, identification is further influenced by teacher beliefs and institutional practices (Bianco & Leech, 2010; Barnard-Brak et al., 2015; Rizza & Morrison, 2003). This decentralisation appears to allow flexibility but also introduces variability and inconsistency in recognising 2e learners.

2.2 Limitations of Standardised Assessment

Standardised psychometric assessments remain the dominant tool for identifying both giftedness and learning disabilities. Instruments such as the Wechsler Intelligence Scale for Children and the Stanford-Binet Intelligence Scales are widely used to assess cognitive ability (Roid & Pomplun, 2012). However, their application in identifying 2e learners is problematic.

Research demonstrates that standardised assessments may fail to capture the uneven cognitive profiles characteristic of 2e learners. For instance, Munro (2005) found that 2e learners exhibited deficits in phonological processing while demonstrating strengths in higher-order comprehension tasks. Similarly, Ottone-Cross et al. (2019) reported that 2e learners performed comparably to gifted peers in higher-level tasks but aligned with learning-disabled peers in foundational skills.

These findings illustrate that reliance on aggregate scores can obscure meaningful intra-individual variability. Moreover, the use of rigid cut-off scores further exacerbates under-identification, as learning disabilities may suppress performance below giftedness thresholds (Brody & Mills, 1997; van Viersen et al., 2016).

Ferri et al. (1997) provide compelling longitudinal evidence of delayed identification, with a significant proportion of 2e individuals only identified in adulthood. This delay reflects systemic limitations in assessment practices, reinforcing the need for more sensitive and flexible approaches.

2.3 Beyond Psychometrics: Expanding Identification Frameworks

In response to these limitations, researchers advocate for multi-method identification frameworks that integrate both formal and informal measures (Foley-Nicpon et al., 2011; Baum et al., 2014; Maddocks, 2018). These frameworks emphasise the importance of contextual and behavioural data, including teacher observations, parent reports, and authentic assessments.

Baum and Owen (1988) highlight the value of examining non-cognitive variables such as creativity and motivation, demonstrating that a significant proportion of students with learning disabilities exhibit characteristics of giftedness. Similarly, Chamberlin et al.

(2007) advocate for play-based and routines-based assessments in early childhood, arguing that these approaches provide more ecologically valid insights into children's abilities.

However, expanding identification frameworks introduces new challenges. Informal measures appear to lack standardisation, raising concerns about reliability and bias. This creates a fundamental tension between sensitivity and objectivity, which remains unresolved in the literature.

2.4 Towards a Multiple Assessment Framework

The convergence of evidence indicates that no single method is sufficient for identifying 2e learners. Instead, a multiple assessment framework that integrates diverse data sources is recommended (Foley-Nicpon et al., 2011; Baldwin et al., 2015b). Such frameworks prioritise comprehensive evaluation, incorporating cognitive, behavioural, and contextual data. Crucially, they shift the focus from categorisation to understanding learner profiles holistically.

However, while multi-method assessment approaches have been proposed as a solution (Foley-Nicpon et al., 2011; Baum et al., 2014), these introduce their own challenges. Qualitative and observational methods, although more sensitive to complexity, rely heavily on educator interpretation, which is itself shaped by prior beliefs and training (Carman, 2011; Bannister-Tyrrell et al., 2018; Rizza & Morrison, 2003). This raises questions regarding reliability and consistency, particularly in early childhood settings where developmental variability further complicates interpretation.

There is also an implicit assumption within the literature that improved assessment practices alone will resolve identification challenges. Yet this perspective can underestimate the role of systemic factors, including policy frameworks, resource allocation, and institutional priorities, which influence whether and how identification is pursued. In contexts where educational systems are structured around categorical eligibility, learners who do not fit clearly within predefined classifications may remain unsupported regardless of assessment sophistication (Barnard-Brak et al., 2015; Bianco & Leech, 2010; Prior, 2013).

Taken together, the literature suggests that identification is not merely a technical challenge but a systemic one, requiring alignment between conceptual definitions, assessment practices, and institutional structures.

3. Programming: Balancing Strengths and Needs

3.1 Programming for Twice-Exceptional Learners: Navigating the Strength-Support Paradox

Following identification, the development of appropriate programming for 2e learners presents a complex pedagogical challenge. The literature consistently emphasises the need for differentiated approaches that simultaneously nurture areas of strength while providing targeted support for areas of difficulty (Baldwin et al., 2015; Mills & Brody, 1999; Weinfeld et al., 2002). However, while this dual emphasis is widely advocated, its implementation remains conceptually and practically contested.

At the core of this challenge lies what can be understood as the strength-support paradox. On one hand, strengths-based approaches argue that educational programmes should foreground learners' talents, interests, and advanced capabilities, thereby promoting motivation, engagement, and positive self-concept (Baum, 1990; Renzulli & Reis, 2018). On the other hand, the presence of learning disabilities necessitates structured intervention, often characterised by repetition, explicit instruction, and remediation (Tuckerman, 2006). These two approaches are not inherently incompatible, yet in practice, they are frequently treated as competing priorities.

Research highlights that an overemphasis on deficit remediation may inadvertently suppress the very strengths that define twice-exceptionality. For instance, Dare and Nowicki (2015) observed that programmes focusing predominantly on deficits contributed to diminished self-efficacy and disengagement among 2e learners. Similarly, qualitative accounts from learners highlight experiences of frustration when instructional approaches fail to recognise their advanced abilities, reinforcing perceptions of inadequacy despite evident strengths (Coleman, 2001). Conversely, environments that privilege strengths without adequately addressing learning needs risk leaving foundational difficulties unaddressed, which can hinder long-term academic development.

This tension is further complicated by structural constraints within educational systems. In many contexts, support services are organised around categorical models, gifted education and special education, each with distinct pedagogical priorities, resource allocations, and professional expertise. As a result, 2e learners often receive fragmented support, with strengths and difficulties addressed in isolation rather than through an integrated framework (Baum et al., 2014). This fragmentation reflects a broader systemic issue in which educational provision is aligned to singular exceptionalities, thereby rendering twice-exceptionality conceptually acknowledged but operationally marginalised.

3.2 Towards Integrated and Differentiated Programming

In response to these challenges, the literature increasingly advocates for integrated programming models that reconcile strengths-based and compensatory approaches. Differentiated instruction is central to this effort, requiring educators to design learning experiences that are responsive to the learner's profile across multiple domains (Tomlinson, 2014). This includes the provision of advanced content in areas of strength alongside targeted scaffolding in areas of difficulty.

Empirical studies provide support for such integrated approaches. For instance, Ottone-Cross et al. (2019) demonstrated that 2e learners exhibit patterns of high-level reasoning alongside specific academic difficulties, suggesting that programming must accommodate both advanced and foundational learning needs. Similarly, Kuo et al. (2010), in their study of gifted preschoolers including those with disabilities, found that enrichment programmes incorporating problem-solving, social learning, and interest-based activities enabled learners to demonstrate both growth and engagement.

However, while differentiated instruction is widely endorsed, its enactment is contingent on teacher expertise, time, access to resources, and the adequacy of teacher preparation for diverse learners. (Manning et al., 2019; Bannister-Tyrrell et al., 2018; Rowan & Townend, 2016). In early childhood settings, where class sizes may be large and formal diagnostic information limited, educators often rely on observational judgments to guide differentiation, drawing on their professional beliefs, experiences, and interpretations of learner behaviour (Rizza & Morrison, 2003; Bannister-Tyrrell et al., 2018). This introduces variability in implementation and raises questions about the consistency with which 2e learners are supported across contexts.

3.3 Inclusion and the Role of Learning Environments

The concept of inclusive education offers a potential framework through which integrated programming for 2e learners appears to be realised. Inclusion, broadly defined as the provision of equitable learning opportunities for all students regardless of differences (Hornby, 2015), aligns with the holistic and child-centred approaches advocated in early childhood education.

In Singapore, inclusive practices have gained prominence within the Early Childhood Care and Education (ECCE) sector, with increasing emphasis on supporting learners with diverse needs within mainstream classrooms. However, inclusion has largely been conceptualised in relation to disability, with limited explicit consideration of giftedness or twice-exceptionality. This creates a unidirectional model of inclusion, where support structures are designed primarily to address deficits rather than to cultivate strengths. Studies examining inclusive practices in Singapore preschools (Yeo et al., 2011; Lipponen et al., 2019) highlight both enabling factors, such as collaboration and communication,

and constraints, including limited training and resource availability. While these findings are not specific to 2e learners, they suggest that the effectiveness of inclusive programming is heavily influenced by systemic conditions, including teacher preparedness and institutional support.

The application of tiered frameworks such as Response to Intervention (RtI) has been proposed as a means of addressing these challenges by providing structured, data-informed approaches to identification and support (Fuchs & Fuchs, 1998), particularly in contexts where formal diagnosis can be delayed or unavailable (Barnard-Brak et al., 2015). Originally developed for special education, RtI adopts a tiered approach to support, progressing from universal instruction to targeted and intensive interventions. Adaptations of RtI for 2e learners advocate the integration of strengths-based enrichment within each tier, thereby ensuring that advanced capabilities are not overlooked (Crepeau-Hobson & Bianco, 2011). While promising in principle, the implementation of such models requires coordinated effort across multiple stakeholders, which may be difficult to achieve in resource-constrained environments.

3.4 Technology as a Mediating Tool

Technology has been identified as a potential enabler of integrated programming for 2e learners. Beyond its role as an assistive tool, technology can function as a mediating agent that bridges gaps between ability and performance by enabling access, representation, and engagement aligned with learner needs (Williams & Burden, 2006). For example, tools such as text-to-speech software, digital composition platforms, and interactive learning environments allow learners to access and demonstrate knowledge in ways that circumvent specific difficulties (Weinfeld et al., 2002; Winebrenner, 2003). From a theoretical perspective, technology can be conceptualised as a form of scaffolding, aligning with Vygotsky's notion of the More Knowledgeable Other, where learning is facilitated through guided interaction within a social context (Williams & Burden, 2006). When designed and implemented effectively, technological tools can support learners in operating within their Zone of Proximal Development, enabling engagement with higher-level tasks that might otherwise be inaccessible (Williams & Burden, 2006).

However, the effectiveness of technology is contingent on intentional use. As Lee et al. (2021) observed in the Singapore context, while technology is widely available, its use is often skewed towards entertainment rather than learning. This underscores the importance of adult mediation in ensuring that technology functions as a meaningful educational tool rather than a passive distraction.

3.5 Social-Emotional Considerations and Learner Identity

An often-underemphasised dimension of programming for 2e learners is the development of self-awareness and identity. The coexistence of strengths and difficulties is likely to contribute to conflicting self-perceptions, with learners struggling to reconcile their abilities with their challenges (Ronksley-Pavia et al., 2019). Without appropriate support, this may result in reduced motivation, anxiety, and disengagement.

Research indicates that programming which foregrounds strengths can positively influence self-concept and academic motivation (Wang & Neihart, 2015b). At the same time, explicit support for social-emotional development, including opportunities for reflection, mentoring, and peer interaction, is critical in fostering a coherent sense of self and promoting positive learner outcomes (Gómez-Arízaga & Conejeros-Solar, 2019; Wang & Neihart, 2015a; Bannister-Tyrrell et al., 2018).

Essentially, these findings suggest that programming for 2e learners cannot be confined to academic considerations alone. Instead, it must adopt a holistic approach that integrates cognitive, social, and emotional dimensions of development, particularly in early childhood where foundational attitudes towards learning are formed.

3.6 Implications for Preschool Contexts

In preschool settings, the challenges of programming for 2e learners are further amplified by developmental variability and the absence of formal identification processes. However, these contexts also present unique opportunities. Play-based and inquiry-driven learning environments, which are central to early childhood education, may naturally support strengths-based engagement while allowing for embedded support strategies that promote cognitive, social, and self-regulatory development (Karpov, 2014; Hostettler Schärer, 2017; Holt, 2020).

The alignment between early childhood pedagogical approaches and recommended practices for 2e learners suggests that preschool settings appear to be uniquely positioned to support this population, even in the absence of explicit policy frameworks. However, this potential is contingent on teacher awareness, intentionality, and the ability to recognise and respond to the complex profiles of 2e learners.

4. Teacher Readiness: Awareness, Beliefs, and Training

4.1 Teacher Readiness for Twice-Exceptional Learners: Knowledge, Beliefs, and Systemic Constraints

Teacher readiness has consistently been identified as a critical determinant in the identification and support of twice exceptional (2e) learners (Firat & Bildiren, 2022;

Lamanna et al., 2020; Reis et al., 2000). While conceptual frameworks and assessment models provide the theoretical foundation for understanding twice-exceptionality, it is ultimately teachers who interpret behaviours, make referral decisions, and enact instructional strategies. As such, teacher readiness operates as a mediating layer through which all other aspects of support are interpreted and enacted in practice (Bianco & Leech, 2010; Barnard-Brak et al., 2015).

The literature indicates that teacher readiness is not a singular construct, but comprises three interrelated dimensions: knowledge, beliefs, and professional context. These dimensions interact to shape how teachers perceive, interpret, and respond to learners whose profiles deviate from normative expectations.

4.2 Knowledge Gaps and Conceptual Uncertainty

A consistent finding across studies is that teacher training in twice-exceptionality remains underdeveloped, resulting in limited conceptual understanding of the construct (Firat & Bildiren, 2022; Lamanna et al., 2020). While educators may possess knowledge of giftedness or learning disabilities independently, the intersection of the two remains poorly understood.

This gap is particularly consequential because twice-exceptionality challenges conventional schemas through which teachers categorise learners. Without an integrated conceptual framework, teachers may default to recognising the more salient or disruptive aspect of a learner's profile, often privileging observable difficulties over less visible strengths (Rizza & Morrison, 2003; Bianco & Leech, 2010). For instance, a child demonstrating inattentiveness can be perceived primarily through a behavioural lens, while their advanced reasoning abilities remain unrecognised.

Research by Reis et al. (2000) indicates that such partial recognition can lead to misidentification, where learners are categorised under a single exceptionality. Similarly, Bechard (2019) found that teachers frequently overlooked indicators of giftedness in students with diagnosed disabilities, suggesting that knowledge gaps extend beyond awareness to the ability to apply conceptual understanding in practice.

In early childhood settings, these challenges are further amplified by the absence of formal diagnostic information. Teachers rely heavily on observational data, which is inherently interpretive. Extending this, without adequate knowledge of twice-exceptionality, behaviours such as asynchronous development may be misinterpreted as inconsistency or immaturity rather than recognised as indicative of complex learner profiles. (Reis et al., 2000; Bechard, 2019; Firat & Bildiren, 2022).

4.3 Teacher Beliefs and Cognitive Framing

Beyond knowledge, teacher beliefs play a significant role in shaping responses to 2e. Beliefs about intelligence, ability, and disability influence how teachers interpret student behaviours and make instructional decisions.

Studies have shown that many educators hold implicit assumptions that giftedness is associated with high academic performance and consistent achievement (Bianco & Leech, 2010; Rizza & Morrison, 2003). Within this framework, learners who exhibit uneven performance may not be perceived as gifted. Conversely, deficit-oriented perspectives of disability may lead teachers to focus on limitations rather than potential.

Carman (2011) provides evidence that exposure and experience can influence these beliefs. In-service teachers demonstrated more nuanced understandings of twice-exceptionality compared to pre-service teachers, suggesting that direct engagement with diverse learners can challenge stereotypical assumptions. However, experience alone does not guarantee conceptual clarity, particularly in the absence of targeted professional development.

The persistence of these beliefs reflects broader systemic narratives within education, where performance metrics and accountability structures prioritise measurable outcomes and standardised indicators of achievement (Barnard-Brak et al., 2015; Bianco & Leech, 2010). In such contexts, variability is often viewed as problematic rather than informative, reinforcing a preference for categorisation over complexity.

4.4 Professional Context and Systemic Constraints

Teacher readiness must also be understood within the broader professional context in which educators operate. Even when teachers possess knowledge and hold inclusive beliefs, their ability to act on this understanding may be constrained by systemic factors.

Time, resources, and institutional expectations play a significant role in shaping practice. For instance, large class sizes and curriculum demands may limit opportunities for differentiation, while the absence of specialised support services may restrict intervention options. Rowan and Townend (2016) highlight that teachers often feel underprepared to meet diverse learning needs, a sentiment that is likely intensified in the context of twice-exceptionality. This creates a gap between policy aspirations and classroom realities, where teachers are expected to support diverse learners without sufficient preparation.

Furthermore, the structure of educational systems often reinforces categorical approaches to support, where services are organised around distinct domains such as gifted education and special education, each with its own frameworks and expertise.

As a result, teachers may struggle to access integrated support for learners who do not fit neatly within these categories (Prior, 2013; Barnard-Brak et al., 2015).

4.5 Teacher Readiness as the Missing Link in Programming

The challenges associated with teacher readiness have direct implications for programming. As discussed in the previous section, the strength–support paradox requires educators to balance enrichment and remediation within a unified framework. However, achieving this balance is contingent on the teacher’s ability to recognise both dimensions of a learner’s profile and to design instruction accordingly.

In practice, limited knowledge and prevailing beliefs may result in a bias towards remediation, as difficulties are often more visible and more closely aligned with existing support structures (Dare & Nowicki, 2015; Reis et al., 2000). This reinforces the deficit-oriented patterns identified in the literature and contributes to the marginalisation of strengths.

Conversely, teachers who adopt a more integrated perspective are better positioned to implement differentiated instruction that supports both strengths and areas of need, thereby addressing the dual profile characteristic of twice-exceptionality (Baum et al., 2014; Tomlinson, 2014). This indicates that teacher readiness is not merely a contributing factor but a central mechanism through which effective programming is realised.

4.6 Towards Enhanced Teacher Readiness

The literature points to several avenues for strengthening teacher readiness. Targeted professional development that explicitly addresses twice-exceptionality is essential in building both knowledge and conceptual understanding and should extend beyond awareness to include practical strategies for identification and differentiation (Firat & Bildiren, 2022; Rowan & Townend, 2016).

Collaborative models of practice also hold promise. Opportunities for teachers to engage with specialists, share experiences, and reflect on practice can support the development of more nuanced understandings, aligning with social constructivist perspectives that emphasise learning through interaction and reflection (Williams & Burden, 2006; Karpov, 2014).

Additionally, systemic changes are required to support teacher readiness. This includes the development of integrated frameworks that bridge gifted and special education, as well as policies that explicitly recognise and prioritise twice-exceptionality within early childhood contexts (Baldwin et al., 2015; Prior, 2013). Collectively, these findings position teacher readiness not merely as an enabling factor, but as a central mechanism through which systemic constraints are either reproduced or disrupted.

4.7 Implications for Early Childhood Education

In early childhood settings, where formal identification processes are less established, teacher readiness assumes even greater significance. Educators play a central role in interpreting developmental variability and identifying potential indicators of twice-exceptionality.

The inherently flexible and play-based nature of early childhood pedagogy provides opportunities for observing a wide range of behaviours and abilities. However, realising this potential requires teachers to possess the knowledge and confidence to interpret these observations meaningfully.

Strengthening teacher readiness in early childhood education is therefore critical not only for improving identification but also for shaping the learning environments in which 2e learners develop.

5. Parent Partnerships: Advocacy and Alignment

5.1 Parent Partnerships in Twice-Exceptionality: Advocacy, Alignment, and System Navigation

Parents play a critical and often underexamined role in the identification and support of twice exceptional (2e) learners. Across the literature, parents are frequently positioned not only as contributors to the educational process but as active agents who navigate, challenge, and, at times, compensate for systemic limitations (Mollenkopf et al., 2021; Speirs Neumeister et al., 2013). Their involvement is particularly salient in the context of twice-exceptionality, where the complexity of learner profiles often exceeds the interpretive capacity of standard educational frameworks.

One of the most consistent findings in the literature is that parents are often the first to recognise the asynchronous development characteristic of twice-exceptionality (Mollenkopf et al., 2021; Speirs Neumeister et al., 2013). Observing their children across multiple contexts, parents are uniquely positioned to identify patterns that may not be immediately visible within structured classroom environments. These observations frequently form the basis for initial referrals and subsequent assessments.

However, the recognition of twice-exceptionality by parents does not necessarily translate into corresponding recognition within educational systems. Barber and Mueller (2011) highlight that discrepancies between parent and teacher perceptions can create significant barriers to identification and support. While parents may emphasise strengths and potential, educators may prioritise observable difficulties, particularly those that disrupt classroom functioning. This divergence reflects broader differences in perspective, shaped by role expectations, professional training, and institutional priorities.

5.2 Parents as Advocates and System Navigators

In response to these discrepancies, parents of 2e learners often assume advocacy roles, actively seeking assessments, negotiating support, and, in some cases, supplementing educational provision outside of school systems (Mollenkopf et al., 2021). This advocacy is not merely supportive but frequently compensatory, addressing gaps in recognition and provision.

The literature points to this role as both empowering and burdensome. On one hand, parental advocacy can facilitate more accurate identification and access to appropriate support, particularly in contexts where system responsiveness is limited (Mollenkopf et al., 2021; Speirs Neumeister et al., 2013). On the other hand, it places considerable responsibility on families to navigate complex and often fragmented systems, raising concerns about equity and access to support (Barber & Mueller, 2011; Mollenkopf et al., 2021). This dynamic raises questions about equity, as access to advocacy resources may vary significantly across families.

Speirs Neumeister et al. (2013) further note that parents often develop sophisticated understandings of twice-exceptionality through lived experience, sometimes exceeding the knowledge base of educators. While this expertise can enhance collaboration, it may also create tension when parent perspectives challenge institutional norms or professional authority.

5.3 Alignment and Misalignment Between Home and School

Effective support for twice-exceptional learners depends on alignment between home and school contexts, particularly in relation to shared understandings of learner strengths and needs (Wang & Neihart, 2015a; Gómez-Arízaga & Conejeros-Solar, 2019). However, the literature indicates that such alignment is not easily achieved. Differences in priorities, communication styles, and expectations may reinforce patterns of fragmented approaches to support.

Parents may prioritise the development of strengths and long-term potential, while educators, operating within structured curricula and accountability systems, may focus on immediate academic or behavioural concerns (Barber & Mueller, 2011). This divergence can result in conflicting strategies, with learners receiving inconsistent messages about their abilities and needs.

Wang and Neihart (2015a) emphasise that collaborative partnerships, characterised by mutual respect and shared decision-making, are associated with more positive outcomes. Such partnerships require open communication and a willingness to engage with multiple perspectives. However, achieving this level of collaboration requires time, trust, and

institutional support, which may not always be available within existing educational structures (Barber & Mueller, 2011; Wang & Neihart, 2015a).

5.4 Parent Partnerships Within a Systems Perspective

From a systems perspective, parent partnerships function as both a support mechanism and a feedback loop, influencing and reflecting the responsiveness of educational systems (Mollenkopf et al., 2021). Where educational systems are responsive and well-integrated, parents contribute to a collaborative process of identification and support. However, where systems are fragmented or limited in scope, parents may be required to compensate for these gaps.

This dual role highlights the importance of situating parent partnerships within broader systemic considerations, including policy frameworks, institutional practices, and access to resources (Barber & Mueller, 2011; Prior, 2013). Strengthening collaboration is not solely a matter of improving communication but requires alignment across conceptual frameworks, assessment practices, and institutional structures.

5.5 Implications for Early Childhood Education

In early childhood settings, the role of parents is particularly significant. Given the developmental variability characteristic of early childhood, parents provide essential insights that complement observational data collected by educators, supporting more accurate interpretation of behaviours and more responsive programming (Chamberlin et al., 2007; Kuo et al., 2010).

However, the effectiveness of these partnerships depends on the extent to which educators are equipped to engage with parents as collaborators. This requires not only effective communication skills but also a willingness to integrate multiple perspectives into decision-making processes, recognising the complementary expertise of both educators and families (Wang & Neihart, 2015a; Gómez-Arízaga & Conejeros-Solar, 2019).

Strengthening parent partnerships in early childhood education therefore involves both relational and structural dimensions. It requires building trust and shared understanding, while also ensuring that systems are designed to support collaborative engagement.

6. Synthesis: Towards a Systems Perspective

Across the literature, a consistent pattern emerges: the challenges associated with twice-exceptionality are systemic rather than isolated. Definitional ambiguity, assessment limitations, pedagogical constraints, and teacher readiness are deeply interconnected.

Addressing these challenges requires a shift from fragmented interventions to integrated, systems-level approaches. Such approaches must align conceptual frameworks, assessment practices, and pedagogical strategies to support the complex profiles of twice-exceptional learners.

LIMITATIONS

This review is constrained by the limited availability of research on twice-exceptionality in early childhood, particularly within Asian contexts. Variability in definitions and methodologies further limits comparability.

Directions for Future Research

Future research should prioritise:

- ◆ Development of contextually grounded identification frameworks
- ◆ Evaluation of integrated programming models
- ◆ Investigation of teacher training interventions
- ◆ Longitudinal studies examining developmental trajectories

CONCLUSION

Twice-exceptionality remains an under-recognised yet critical area within early childhood education. While conceptual and empirical advances have contributed to a growing understanding of the coexistence of giftedness and disability, significant gaps persist in translating this knowledge into coherent and effective practice.

This review has argued that these challenges are not isolated but systemic. Definitional ambiguity, limitations in assessment practices, fragmented programming, and insufficient teacher preparedness are not discrete issues but interconnected elements within a broader educational ecosystem. Within this system, twice-exceptional learners are often rendered invisible, not due to a lack of evidence, but due to misalignment across conceptual frameworks, institutional structures, and pedagogical practices.

By synthesising literature across identification, programming, teacher readiness, and parent partnerships, this paper advances a systems-level perspective that positions twice-exceptionality as an emergent phenomenon shaped by the interaction between learner characteristics and educational contexts. This perspective reframes identification as an interpretive and ongoing process, rather than a fixed outcome, and highlights the central role of educators and systems in either enabling or constraining the recognition of dual exceptionality.

Importantly, this review contributes to the field by foregrounding the interdependence of these domains, and by situating early childhood education as a critical, yet underexplored, context in which twice-exceptionality may first be observed and supported. It also underscores the need to move beyond deficit-oriented models towards integrated approaches that recognise both strengths and challenges as essential components of learner development.

Future progress in this field will depend on the development of contextually grounded frameworks that align theory, assessment, and practice. This includes strengthening teacher readiness, designing integrated programming models, and fostering collaborative partnerships with families. Without such alignment, twice-exceptional learners will continue to fall between systems designed to support singular categories of need.

Ultimately, recognising and supporting twice-exceptionality in early childhood is not simply a matter of improving identification practices, but of rethinking how educational systems conceptualise ability, difference, and potential. Such a shift is essential to ensure that learners with complex profiles are not only seen but meaningfully supported in ways that allow both their strengths and challenges to be understood and developed. Such a shift is essential not only for recognition, but for ensuring that educational systems can respond to complexity as a fundamental condition of learning, rather than an exception to it.

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